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STATE OF ILLINOIS

DEPARTMENT OF REGISTRATION AND EDUCATION



Public Groundwater Supplies in Lake County

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EPA Region 5 Records Ctr.



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ILLINOIS STATE WATER SURVEY

URBANA

1976

SYSTEM	SERIES	GROUP OR FORMATION	AQUIFER		LOG	THICKNESS (FT)	DESCRIPTION		
QUATERNARY	PLEISTOCENE		Sands and Gravels			90-325	Unconsolidated glacial deposits-pebbly clay (till), silt, sand and gravel Alluvial silts and sands along streams		
				Fissure Fillings		Shale, sandy, brown to black			
SILURIAN	NIAGARAN	Racine	Silurian		0-180	Dolomite, very pure to argillaceous, silty, cherty; reefs in upper part			
		Sugar Run				Dolomite, slightly argillaceous and silty			
		Joliet				Dolomite, very pure to shaly and shale, dolomitic; white, light gray, green, pink, maroon			
	ALEXANDRIAN	Kankakee			0-90	Dolomite, pure top 1'-2', thin green shale partings, base glauconitic			
		Elwood				Dolomite, slightly argillaceous, abundant layered white chert			
		Wilhelmi				Dolomite, gray, argillaceous and becomes dolomitic shale at base			
ORDOVICIAN	CINCINNATIAN	Maquoketa			100-240	Shale, red; oolites Shale, silty, dolomitic, greenish gray, weak (Upper unit) Dolomite and limestone, white, light gray, interbedded shale (Middle unit) Shale, dolomitic, brown, gray (Lower unit)			
	CHAMPLAINIAN	Galena	Galena-Platteville			270-335	Dolomite, and/or limestone, cherty (Lower part) Dolomite, shale partings, speckled Dolomite and/or limestone, cherty, sandy at base		
		Platteville							
		Glenwood	Glenwood-St. Peter					165-300	Sandstone, fine and coarse grained; little dolomite; shale at top Sandstone, fine to medium grained; locally cherty red shale at base
		St. Peter							
	CAMBRIAN	CROIXAN	Eminence		Eminence Potosi		0-100	Dolomite, light colored, sandy, thin sandstones	
Potosi			Dolomite, fine-grained, gray to brown, drusy quartz						
Franconia			Franconia	40-80	Dolomite, sandstone and shale, glauconitic, green to red, micaceous				
Ironton			Ironton-Galesville		100-190		Sandstone, fine to coarse grained, well sorted; upper part dolomitic		
Galesville									
Eau Claire				385-475	Shale and siltstone, dolomitic, glauconitic; sandstone, dolomitic, glauconitic				
Elmhurst Member			Elmhurst-Mt. Simon		1200-2000		Sandstone, coarse grained, white, red in lower half; lenses of shale and siltstone, red, micaceous		
Mt. Simon									
PRE-CAMBRIAN	Granitic rocks								

Figure 1. Generalized column of rock stratigraphic units and aquifers in Lake County
(Prepared by M. L. Sargent, Illinois State Geological Survey)



Groundwater is used as a source of public water supply at 23 municipalities, 32 subdivisions, 2 state parks, and 1 treatment plant in Lake County. The locations of these supplies are shown in figure 2.

deposits. Their reported yields range from 10 to 1500 gpm depending primarily upon the type of well and the permeability, thickness, and areal extent of the sand and gravel unit tapped by each well. Production from these wells for 1972 through 1975 was estimated to be about 3,330,000 gpd.

The analyses of water from these wells show that the iron content ranges from 0.0 to 2.5 mg/l and the hardness from 118 to 580 mg/l. The sulfate content of water from

RIVERWOODS COMMUNITY

Riverwoods Community (est. 85), located 1 mile west of Deerfield, installed a public water supply in 1957. The water system is owned by the village of Riverwoods and operated by the Lake County Public Works Department. One well is in use. In 1973 there were 26 services, all metered; the estimated average and maximum daily pumpages were 17,000 and 25,000 gpd, respectively. The water is chlorinated. The natural fluoride concentration in the water is adequate to satisfy state requirements.

WELL NO. 1, open to the Iron-ton-Galesville Sandstone, was completed in January 1962 to a depth of 1367 ft by the Milaeger Well and Pump Co., Milwaukee, Wis. The well is located next to the elevated tank at the Bannockburn Country Club, approximately 2400 ft S and 1150 ft E of the NW corner of Section 30, T43N, R12E. The land surface elevation at the well is approximately 677 ft.

A sample study summary log of Well No. 1 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
Soil	5	5
Till	40	45
Silt	5	50
Till	85	135
Gravel and sand	10	145
SILURIAN SYSTEM		
Niagaran Series		
Dolomite	175	320
Alexandrian Series		
Dolomite	85	405
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale and dolomite	125	530
Champlainian Series		
Galena Group		
Dolomite	205	735
Platteville Group		
Dolomite	95	830
Ancell Group		
Glenwood Formation		
Sandstone	55	885
St. Peter Sandstone		
Sandstone, shale	175	1060
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite		
Dolomite	85	1145
Franconia Formation		
Dolomite, sandstone	65	1210

Strata	Thickness (ft)	Depth (ft)
X Iron-ton-Galesville Sandstone	155	1365
Sandstone		
Eau Claire Formation	5	1370
Siltstone		

A 19-in. diameter hole was drilled to a depth of 565 ft, reduced to 15 in. between 565 and 1090 ft, reduced to 14 in. between 1090 and 1220 ft, and finished 10 in. in diameter from 1220 to 1367 ft. The well is cased with 20-in. drive pipe from 2.5 ft above the pumphouse floor to a depth of 157 ft and 10-in. pipe from 2.5 ft above the pumphouse floor to a depth of 1220 ft (cemented in).

A production test was conducted by the driller on January 3-4, 1962. After 24 hr of pumping at rates of 158 to 393 gpm, the maximum drawdown was 130 ft from a non-pumping water level of 333 ft below land surface. Ten min after pumping was stopped, the water level had recovered to 343 ft.

The pumping equipment presently installed is a Byron Jackson submersible pump set at 675 ft, rated at 400 gpm at about 800 ft TDH, and powered by a 100-hp Byron Jackson electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. 03583) is for a water sample from the well collected January 10, 1972, after 30 min of pumping at 370 gpm.

WELL NO. 1, LABORATORY NO. 03583

	mg/l	me/l		mg/l	me/l
Iron	Fe	0.5	Silica	SiO ₂	8
Manganese	Mn.	0.0	Fluoride	F	1.3 0.07
Ammonium	NH ₄	0.5	Boron	B	0.0
Sodium	Na	24	Nitrate	NO ₃	0.0
Potassium	K	11.4	Chloride	Cl	8.5 0.24
Calcium	Ca	90	Sulfate	SO ₄	107 2.23
Magnesium	Mg	20	Alkalinity (as CaCO ₃)		252 5.04
			Hardness (as CaCO ₃)		296
			Total dissolved minerals		438
Barium	Ba	0.0	pH (as rec'd)		7.6
Copper	Cu	0.0	Radioactivity		
Cadmium	Cd	0.00	Alpha pc/l		9
Chromium	Cr	0.0	± deviation		3
Nickel	Ni	0.0	Beta pc/l		26
Silver	Ag	0.0	± deviation		4
Zinc	Zn	0.0			

ROUND LAKE

The village of Round Lake (1531) installed a public water supply in 1914. One well (No. 2) is in use and another well (No. 1) is available for emergency use. This supply was cross connected with Round Lake Park in October 1951, but water from Round Lake Park has not been used for several years. In 1949 there were 140 services, all metered; the average and maximum daily pumpages were 50,000 and

75,000 gpd, respectively. In 1973 there were 500 services, all metered; the average and maximum daily pumpages were 190,000 and 280,000 gpd, respectively. The water is chlorinated. The natural fluoride concentration in the water is adequate to satisfy state requirements.

WELL NO. 1, finished in Silurian dolomite, was completed in 1912 to a depth of 350 ft by Adam Titus, Liberty-